WE CLAIM:

1.   1.   A wireless data communications system having extended power off capability

2   comprising:

3   (a)   a first station linked to a second station which serves as an access point

4   (AP) to support packet communication, voice or data;

5   (b)   monitoring apparatus at the access point (AP) which sorts packets

6   according to a Continuously Aware Mode (CAM) or Power Saving Model (PSM) mode; and

7   (c)   measuring apparatus at the first station which receives the CAM packets

8   and measures CAM packet arrival time for determining a safe period for turning off the receiver

9   between CAM packets based upon an expected arrival time of the CAM packets.

10   2.   The system of Claim 1 further comprising:

11   (d)   transmitting apparatus which transmits immediately CAM packets to the first

12   station while non-voice packets are buffered by the access point (AP) and held until requested by

13   the first station when in a Power Saving Poll (PSP) mode.

1   3.   The system of Claim 1 wherein the measuring apparatus further comprises:

2   (e)   "jitter" measuring apparatus which measure "jitter" associated with packet arrival

3   intervals.

1   4.   The system of Claim 1 further comprising:

2   (f)   "sleep' apparatus responsive to the measuring apparatus which awakens the first

3   station for receiving packets based upon the safe period.

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1   5.   The system of Claim 1 wherein the access point and the first mobile unit operate under

2   the IEEE 802.11 standard.

1   6.   The system of Claim 1 further comprising:

2   (g)   first station comparing apparatus which compares the ith actual packet arrival

3   time [A (i)] to expected packet arrival time (P).

1   7.   The system of Claim 6 further comprising:

2   (h)   first station determining apparatus which determines the state of the PSP mode as

3   "0" or disable or "1", enabled but in trouble, or "2", enabled.

1   8.   The system of Claim 7 further comprising:

2   (i)   first station processing apparatus which operates when AI (i) does not approach P

3   and waits for the next packet if the PSP state is 0 or waits for the next packet if the PSP mode is

4   "1" with no good packet intervals and reduces the "Power Off" time by a slight amount when the

5   PSP mode is 2 or enabled.

1   9.   The system of Claim 8 further comprising:

2   (j)   first station measuring apparatus which determines an extended "Power Off" time

3   between packets as [P-Standard Deviation of Consecutive Packet Arrival Time AI (i, i+1, i+2) –

4   Receiver Stabilizing Time after "Power On"] when in the "0" mode and AI (i) approaches P or if

5   the PSP mode is "1" or "2"waiting for the arrival of the next packet whereupon the "Power Off"

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6　　mode is extended beyond normal "Power Off" time due to the periodic nature of the voice

7　　traffic.

1　　10.　　A method for extended "Power Off" period for a wireless communication system

2　　comprising:

3　　　　　　(a)　　waiting for packet arrival at a mobile unit in the wireless communication system;

4　　　　　　(b)　　comparing actual packet time {AI(i)] versus P or expected packet arrival time;

5　　　　　　(c)　　determining the status of a PSP mode as "0" or enabled; "1" or in trouble, or "2"

6　　enable;

7　　　　　　(d)　　returning to Step b, if AI (i) does not approach P and the PSP mode is 0 or 1, and

8　　reducing the Power Off time, if the PSP mode is 2;

9　　　　　　(e)　　determining the PSP mode if AI (I) approximates P;

10　　　　　 (f)　　returning to Step a, if the PSP mode is 1 or 2; and

11　　　　　 (g)　　calculating an extended Power Off time.

1　　11.　　The method of Claim 10 further comprising the step of:

2　　　　　　(i)　　reducing the "Power Off" time by a slight amount when the PSP mode is 2 or

3　　enabled when AI (i) does not approach P and waits for the next packet if the PSP state is 0 or

4　　waits for the next packet if the PSP mode is "1" with no good packet intervals.

1　　12.　　The method of Claim 11 further comprising the step of:

2　　　　　　(h)　　waiting for the arrival of the next packet AI (i) which approaches P or if the PSP

3　　mode is "1" or "2".

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1   13.   The method of Claim 12 wherein the actual packet arrival time [AI (i)] = Current Arrival

2   Time (CT) – Last Packet Arrival Time (LT) and LT=CT.

1   14.   The method of Claim 13 wherein the extended Power Off Time is [P – Standard Deviation

2   (AI (i), AI (i-1), AI (i-2) – Receiver Start Up Time (RSU)] when the PSP is 0, whereby an

3   extended Power Off time is achieved by the periodic nature of the packet arriva time.

1   15.   A medium, executable in a computer system, for extended "Power Off" period for a

2   wireless communication system comprising:

3   (a)   program instruction for waiting for packet arrival at a mobile unit in the wireless

4   communication system ;

5   (b)   program instruction for comparing actual packet time {AI(i)] versus P or

6   expected packet arrival time;

7   (c)   program instruction for determining the status of a PSP mode as "0" or enabled;

8   "1" or in trouble, or "2" enable;

9   (d)   program instruction for returning to Step b, if AI (i) does not approach P and the

10   PSP mode is 0 or 1, and reducing the Power Off time, if the PSP mode is 2;

11   (e)   program instruction for determining the PSP mode if AI (I) approximates P;

12   (f)   program instruction for returning to Step a, if the PSP mode is 1 or 2; and

13   (g)   program instruction for calculating an extended Power Off time.

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1   16   The medium of Claim 15 further comprising the step of:

2   (h)   program instruction for reducing the "Power Off" time by a slight amount when

3   the PSP mode is 2 or enabled when AI (i) does not approach P and waits for the next packet if

4   the PSP state is 0 or waits for the next packet if the PSP mode is "1" with no good packet

5   intervals.

1   17.   The medium of Claim 16 further comprising the step of:

2   (i)   program instruction for waiting for the arrival of the next packet AI (i) which

3   approaches P or if the PSP mode is "1" or "2"

1   18.   The medium of Claim 17 wherein the actual packet arrival time [AI (i)] = Current Arrival

2   Time (CT) -- Last Packet Arrival Time (LT) and LT=CT.

1   19.   The medium of Claim 18 wherein the extended Power Off Time is [P – Standard

2   Deviation (AI (i), AI (i-1), AI (i-2) – Receiver Start Up Time (RSU)] when the PSP is 0,

3   whereby an extended Power Off time is achieved by the periodic nature of the packet arrival

4   time.

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